

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method ~~of interleaving storage of data streams on a rotating storage medium of a data storage device, the method~~ comprising:

dividing ~~the~~ a storage medium into a plurality of logical zones, the storage medium having an inner diameter and an outer diameter, each logical zone ~~of the plurality of logical zones~~ extending radially from ~~[[an]] the inner diameter of the storage medium to [[an]] the outer diameter of the storage medium~~; and

writing data from a first stream of data within determined bounds of [[to]] a first logical zone of the plurality of logical zones, wherein the bounds of the first logical zone are determined by for up to an amount of time for rotating through the first logical zone based on corresponding ~~to~~ a rotational speed of the storage medium and a size of the first logical zone.

2. (original) The method of claim 1, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on the rotational speed of the storage medium and an output data rate.

3. (original) The method of claim 1, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on a data transfer rate of the data storage device and an expected output data rate supported by the data storage device.

4. (original) The method of claim 1, further comprising recording an index for at least the beginning of the first logical zone.

5. (original) The method of claim 1, further comprising prior to writing data from a first stream of data to a first logical zone of the plurality of logical zones:

determining a current location on the storage medium;

determining whether the current location is a beginning of the first logical zone; and

responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone.

6. (original) The method of claim 5, wherein writing data from a first stream of data to a first logical zone of the plurality of logical zones comprises writing data starting at an outer diameter of the storage medium and progressing toward an inner diameter of the storage medium.

7. (original) The method of claim 1, further comprising writing data from a second stream of data in a second logical zone of the plurality of logical zones.

8. (original) The method of claim 1, further comprising:

determining a current location on the storage medium;

determining whether the current location is a beginning of the first logical zone, and responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone; and

reading the data from the first stream of data to the storage medium for up to an amount of time corresponding to a rotational speed of the storage medium and size of the first logical zone.

9. (currently amended) ~~A data storage device~~ Apparatus comprising:
~~one or more read/write heads;~~
a rotating storage medium having an inner diameter and an outer diameter and being divided into a plurality of logical zones, each logical zone extending radially from the inner diameter to the outer diameter; ~~accessible by the one or more read/write heads;~~
~~a read/write head positioned a processor coupled with the read/write heads to access data on the storage medium;~~ and a memory connected with and readable by the processor and having stored therein instructions that, when executed by the processor, cause the processor to interleave storage of data streams on the rotating storage medium by dividing the storage medium into a plurality of logical zones, each logical zone of the plurality of logical zones extending radially from an inner diameter of the storage medium to an outer diameter of the storage medium, and the read/write head writing data from a first stream of data within determined bounds of [[to]] a first logical zone of the plurality of logical zones, wherein the bounds of the first logical zone are determined by for up to an amount of time for rotating the read/write head through the first logical zone based on corresponding to a rotational speed of the storage medium and a size of the first logical zone.

10. (currently amended) ~~The data storage device~~ apparatus of claim 9, wherein ~~dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones~~ into which the rotating storage medium is divided is determined based on the rotational speed of the storage medium and an output data rate.

11. (currently amended) ~~The data storage device~~ apparatus of claim 9, wherein ~~dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones~~ into which the rotating storage medium is divided is determined based on a data

transfer rate of the data storage device and an expected output data rate supported by the data storage device.

12. (currently amended) The ~~data storage device~~ apparatus of claim 9, further comprising:

recording an index recorded on the rotating storage medium for at least the beginning of the first logical zone.

13. (currently amended) The ~~data storage device~~ apparatus of claim 9, ~~further comprising wherein,~~ prior to writing data from ~~[[a]] the~~ first stream of data to ~~[[a]] the~~ first logical zone of the plurality of logical zones, ~~[[:]]determining a current location on the storage medium;~~ the read/write head determines ~~determining~~ whether ~~[[the]] a~~ current location of the read/write head is a beginning of the first logical zone ; ~~and responsive to determining that the current location is not the beginning of the first logical zone, waiting~~ waits for the storage medium to rotate to the beginning of the first logical zone before writing, if the current location is not the beginning of the first logical zone.

14. (currently amended) The ~~data storage device~~ apparatus of claim 13, wherein ~~writing data from a first stream of data to a first logical zone of the plurality of logical zones comprises~~ the read/write head writes ~~writing~~ data starting at ~~[[an]] the~~ outer diameter of the storage medium and progressing toward ~~[[an]] the~~ inner diameter of the storage medium.

15. (currently amended) The ~~data storage device~~ apparatus of claim 9, ~~further comprising wherein~~ the read/write head further writes ~~writing~~ data from a second stream of data in a second logical zone of the plurality of logical zones.

16. (currently amended) The ~~data storage device~~ apparatus of claim 9, ~~further comprising: wherein the read/write head determines~~ determining a current location on the storage medium; ~~determining whether [[the]] a current location of the read/write head is a beginning of the first logical zone; , and responsive to determining that the current location is not the beginning of the first logical zone, waiting~~ waits for the storage medium to rotate to the beginning of the first logical zone, if the current location is not the beginning of the first location zone; and ~~reading~~ reads the data from the first stream of data to the storage medium for up to an amount of time corresponding to a rotational speed of the storage medium and size of the first logical zone.

17. (currently amended) A computer readable medium having stored thereon a series of instruction that, when executed by a processor, cause the processor to ~~interleaving~~ interleave storage of data streams on a rotating storage medium of a data storage device by:

dividing the storage medium into a plurality of logical zones, the storage medium having an inner diameter and an outer diameter, each logical zone of the plurality of logical zones extending radially from an inner diameter of the storage medium to an outer diameter of the storage medium; and

writing data from a first stream of data to a first logical zone of the plurality of logical zones for up to an amount of time corresponding to a rotational speed of the storage medium and a size of the first logical zone.

18. (original) The computer readable medium of claim 17, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on the rotational speed of the storage medium and an output data rate.

19. (original) The computer readable medium of claim 17, wherein dividing the storage medium into a plurality of logical zones comprises determining a number of logical zones based on a data transfer rate of the data storage device and an expected output data rate supported by the data storage device.

20. (original) The computer readable medium of claim 17, further comprising recording an index for at least the beginning of the first logical zone.

21. (original) The computer readable medium of claim 17, further comprising prior to writing data from a first stream of data to a first logical zone of the plurality of logical zones:

determining a current location on the storage medium;

determining whether the current location is a beginning of the first logical zone; and

responsive to determining that the current location is not the beginning of the first logical zone, waiting for the storage medium to rotate to the beginning of the first logical zone.

22. (original) The computer readable medium of claim 21, wherein writing data from a first stream of data to a first logical zone of the plurality of logical zones comprises writing data starting at an outer diameter of the storage medium and progressing toward an inner diameter of the storage medium.

23. (original) The computer readable medium of claim 17, further comprising writing data from a second stream of data in a second logical zone of the plurality of logical zones.

24. (original) The computer readable medium of claim 17, further comprising:
determining a current location on the storage medium;
determining whether the current location is a beginning of the first logical zone, and
responsive to determining that the current location is not the beginning of the first logical zone,
waiting for the storage medium to rotate to the beginning of the first logical zone; and
reading the data from the first stream of data to the storage medium for up to an amount
of time corresponding to a rotational speed of the storage medium and size of the first logical
zone.